

**REFORMING WET-TANTALUM CAPACITORS  
IN IMPLANTABLE DEFIBRILLATORS  
AND OTHER MEDICAL DEVICES**

5 **Abstract of the Disclosure**

Miniature defibrillators and cardioverters detect abnormal heart rhythms and automatically apply electrical therapy to restore normal heart function. Critical components in these devices are aluminum electrolytic capacitors, which store and deliver one or more life-saving bursts of electric charge to a heart of a patient. This type of capacitor requires regular "reform" to preserve its charging efficiency over time. Because reform expends valuable battery life, manufacturers developed wet-tantalum capacitors, which are generally understood not to require reform. Yet, the present inventors discovered through extensive study that wet-tantalum capacitors exhibit progressively worse charging efficiency over time. Accordingly, to address this problem, the inventors devised unique reform techniques for wet-tantalum capacitors. One exemplary technique entails charging wet-tantalum capacitors to a voltage equal to about 90% of their rated voltage and maintaining this voltage for about five minutes before discharging them.

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